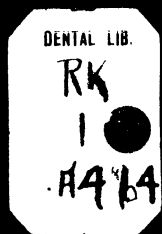
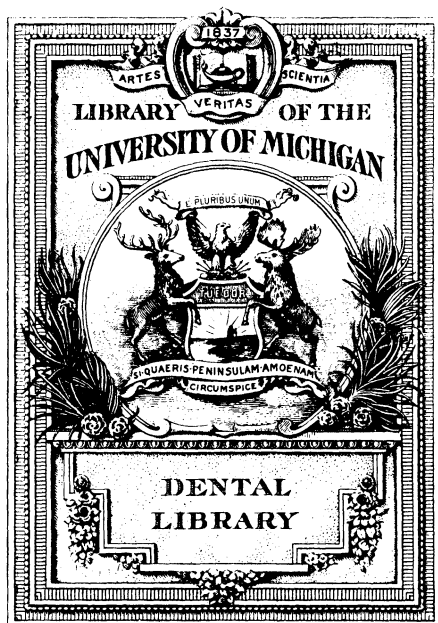


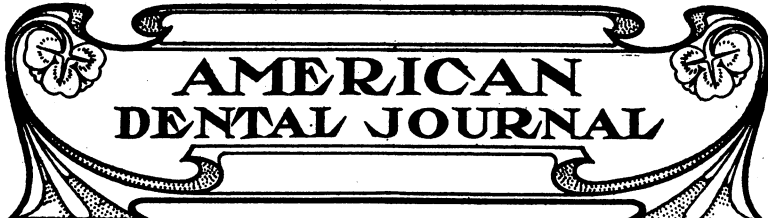
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# PROGRESSIVE COURSE OF PRACTICAL INSTRUCTION

## ORTHODONTIA.

BY J. N. M'DOWELL, D. D. S.,  
PROFESSOR OF ORTHODONTIA, COLLEGE OF DENTISTRY, UNIVERSITY OF  
ILLINOIS.

### CHAPTER XIII.

#### ROTATING TEETH.

When it becomes necessary to rotate a tooth, the strong tension of the periodontal fiber must be overcome, as well as a change in the bony process when the roots are oval or flat. It is owing to this condition that some teeth move far more easily than others according to development. Rotating single teeth, as in Fig. 1, may be accom-



Fig. 1.

plished by the lever alone, as in Fig. 2. But the objection to a lever wire in treating a case like Fig. 2, is that the appliance in inexperienced hands usually throws the tooth forward labially, hence its use is growing obsolete. The best result is obtained by properly bending the lever wire and drawing it backward with ligature wire, which prevents the tooth from moving forward. To aid in rotating with the lever always use a small rubber wedge where the lever rests on tooth at the highest point. (Fig. 2.) When a case is favorable for the use of the lever wire, instead of using the lever wire alone

use the wire arch on the inside, the ends soldered directly to the anchor bands. (Fig. 3.) Of course the lever wire can be discarded and the arch on the inside used alone with the same results in the end. By ligating a wire over a spur on the disto-labial surface of



Fig. 2.

the band of the tooth to be rotated and over a spur on the inside the tooth is drawn back and rotated at the same time. (Fig. 4.) Retain by soldering three bands together.

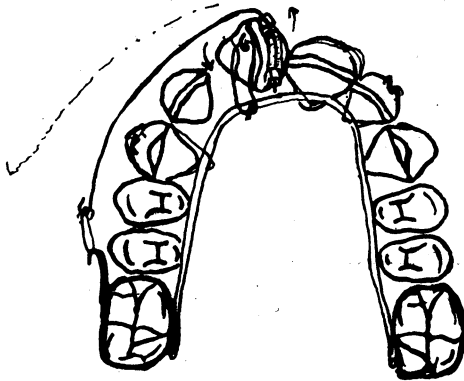


Fig. 3.

In Fig. 5 the central is only partially rotated. In this case owing to the age of the patient ( $7\frac{1}{2}$  years) the condition is favorable for a rapid movement, a wire arch is shaped to fit the lingual surface, solder the ends directly to the molar bands. A spur is soldered to the labial surface of the central band, and then rubber ligatures hooked over the spur, passed back to a hook on the wire



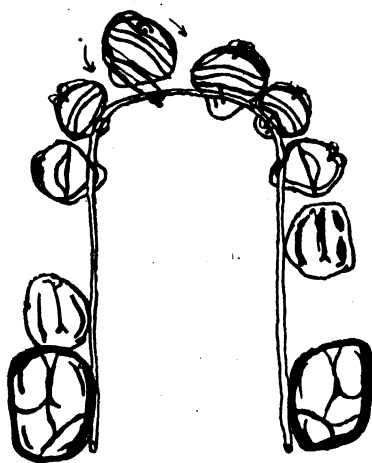


Fig. 4.

arch,—by soldering this hook on the arch well towards the center you can rotate the tooth backward and to one side as is needed here.



Fig. 5.

(Fig. 4.) Later a ligature wire is passed around the centrals to draw them together. Hold the wire arch firm in position in the anterior

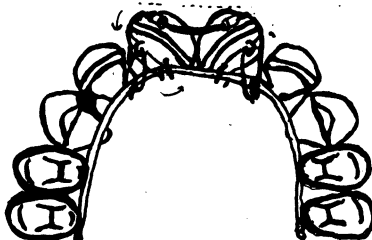


Fig. 6.

part by ligatures around the anterior teeth. Retain by soldering three bands together.

## DOUBLE ROTATION.

The so-called double rotation with the lever wire on the centrals outside is a failure (Fig. 6); where the lever wire is used alone for



A. Fig. 7.

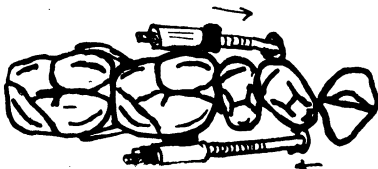
such cases it is of little practical value and only in rare cases will such an appliance be successful alone. Few indeed are the cases suitable for the much illustrated double rotating appliance. It must be reinforced or assisted by a wire arch on the inside or outside, as in Fig. 6, inside to keep the teeth from bulging outward from the



B. Fig. 7.

spring pressure of the lever wire. In fact the author recommends the wire arch on the outside only with the nuts distal to the tubing, using the spurs on the lingual surface of the central bands for rotating. Retain such cases by soldering four bands together, centrals and laterals.

For rotating a bicuspid, which is occasionally necessary, if the patient is erupting bicuspids rotated, a rubber from the other bicuspid and a wire over a spur on short wire (Fig. 7) will rotate it into position, or a wire over a spur on the bicuspids and over the arch will accomplish the result. (B, Fig. 7.) After maturity the small



C. Fig. 7.

jacks or traction screws can be used to good advantage. (C, Fig. 7.) Retain such cases by soldering two bands together, using the two bicuspids, also using a spur against the cuspid if necessary.

(To be continued.)

**PROSTHETIC DENTISTRY.**

BY B. J. CIGRAND, B. S., M. S., D. D. S.

PROFESSOR OF PROSTHETIC DENTISTRY AND TECHNIQS, COLLEGE OF  
DENTISTRY, UNIVERSITY OF ILLINOIS.**CHAPTER XXXII.**

Some of the readers wished further information about the method of constructing the encasement for the artificial tooth. The opinion was entertained that great difficulty would be encountered in the perfectly adapting the dovetail of the tooth to the gold pocket. The possibility of having these pockets or encasements pressed from one sheet of gold is likely. But the case can be easily made and be absolutely accurate in the fit by adapting a piece of gold on each side of the dovetail of the tooth, as shown in Fig. 1. After the gold is fashioned in this form and placed on the tooth the two forms of gold approximate and leave a small space between them, thus allowing adaptation at the sides of the dovetail. The two pieces of gold are then covered by a small strip or sheet of gold and by means of resin wax the three pieces of gold are held in their relative position and the tooth is carefully removed; the gold freed from the remaining material and all soldered into position. By thus shaping each piece separately and later knitting them together with gold solder we have formed a true encasement for the artificial tooth.

In the preceding article attention was given to the use of this form of teeth for anterior dentures either in individual or assembled cases. In this chapter we consider their possibilities on the buccal dentures. Many of the artificial teeth are of great service in the anterior teeth, but of no purpose in the buccal cases; while others which are of excellent pattern for the buccal cases are with no possibilities in the labial cases. This tooth form has elements which make it promissory for both buccal and labial dentures.

The method of construction is somewhat different to the anterior cases, yet if the former is perfectly understood the latter will be easily comprehended.

In Fig. 2 we have a side view of this tooth form and illustrates the strength of the porcelain, as indicated in the bulk of material. The base surface of the bicuspid and molars have a dovetail same as the anterior teeth; the bicuspid and molars are so

bevelled as to admit of reinforcement of gold on the palatal surface of upper teeth and lingual surfaces of the lower teeth, as shown in Fig. 3. The bicuspid and molars are of cuboid form and are able to resist great stress, and the gold is thickest directly below the center of the artificial tooth, at the point where the case demands the greatest stability, and when several are soldered together the gold is thickest directly under the center of the tooth, and also heavy at the interdental space—a point where most of the bridges are weak. Another feature of this tooth when in bicuspid or molar form is the fact that from a buccal view little gold is displayed, since the dovetail is not extended throughout the entire length of the basal surface, but is abruptly stopped a trifle within the buccal surface margin, as shown in Figs. 3 and 9. The encasement for these buccal teeth can be made by taking a box of triangular shaped iridio-platinum metal and shaped like the letter U, and in this form hugs about the dovetail as indicated in Figs. 6 and 7. The gold is then laid or slightly bent to fit the base of tooth, as shown in Fig. 6.

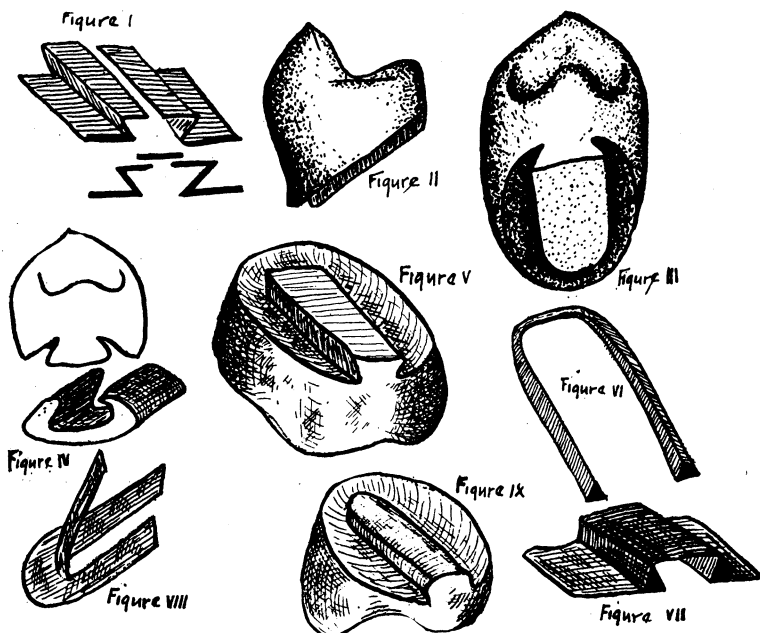
The special objection to the teeth as now employed in the removable bridges is the fact that like the Davis or S. S. White crown the opening in the porcelain is round, and into this is fitted a dowel with a circular or round shape; now teeth with this shaped post or anchorage can not well resist the slightly rotary motion of the jaw. The direct pressure they endure, but when on roots flatly shaped they do not withstand the lateral or cross-movement of the mandible, and it is this action of the jaw that loosens and disturbs the cement anchorage. This is well demonstrated in the frequent twisted conditions of the laterals and centrals. In the form just suggested, namely, the porcelain dovetail encased in metal pocket, this rotary movement of the jaw is absolutely overcome and the construction of the bridge or crown made more prominent.

In Fig. 3 we get a buccal view as in a small bridge and this illustrates the absence of gold display, as is so pronounced in the other methods, giving the natural appearance due to the complete view of porcelain.

The difficulty with many of the teeth now in the supply houses is that the gold under the teeth is too thin, hence yields to pressure, and the sequence is that the cement is not protected and fracture results; the entire attachment is useless, because of the breaking up of the cement anchorage.

In this tooth form you will readily observe that the gold is heavy

directly beneath the point where there is likely to be the greatest strain and thus makes the endurance of the cement a certainty. The frame work in all cases where cement is used as an anchor must be strong, rigid and firm; and any method which does not recognize the element of strength of the metallic foundation is positively subject to failure.



The subject of the gold encasement will be of little concern since I have constructed a pair of forceps or plyers which quickly form the entire pocket of gold.

Many of the profession are anxiously awaiting new ideals along this line and I will be pleased to give them consideration, giving due credit to the inventor or author.

(To be continued.)

DENTAL THERAPEUTICS.

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## CHAPTER XXXIII.

In the discussion of the methane series we have brought forth some of the experimental facts relative to alcohol and its pharmacological changes on the animal organism. As was previously said, to the methane series is attached a group of organic chemical compounds that are pharmacologically designated as the narcotic agents; in this group we have ether and chloroform, two agents which are inseparably connected with medicine and surgery. In the surgical operating room these two agents have done more to relieve the suffering of humanity than any other two compounds known to the science and art of medicine and surgery.

So many text books and essays have been written upon these two agents and their practical application to the art for which they are so universally used, that it seems presumptuous on my part to reiterate anything that has already been said upon this subject; and the field in experimental research has been so well worked out that there is but little to be offered which can strictly be said to be new. There are a few salient points, however, which are always worthy of consideration in the discussion of this subject. There are two classes of anaesthetics, general, and local. There are a number of agents used in general anaesthesia which would not come under the head of the discussion of ether and chloroform, but we only intend to take up those classified under the methane group and classed as general anaesthetics.

A general anaesthetic is the term applied to designate an agent which will render the animal body unconscious for a sufficient duration of time to perform a surgical operation. In the history of medicine some allusions have been made to what would seem to be general anaesthesia, but there is nothing that would indicate that the subject had been discussed or that any agent had been employed to bring about the unconscious state for surgical purposes. In 1798 Davy advised the use of nitrous oxide as an anaesthetic agent, but there was no evidence of a practical utility applied to this suggestion

until 1844, when Wells again attempted to bring this method into practical use, but really met with considerable adverse criticism, and the use of nitrous oxide by Wells was discouraged and he met with as little success as did Davy almost a half century before. In 1842-3 Long administered ether for surgical operations, but as he gave no public announcement of such process the honor really belongs to Jackson and Morton in 1846-7. In 1847 J. Y. Simpson introduced into the medical world the use of chloroform as a general anaesthetic for surgical operations. He made various claims for this agent as being preferable to that of ether for such practical purposes as a general anaesthetic, and he claimed that it was very superior to that of ether inasmuch as it did not produce the nauseating effects which ether did. Throughout Scotland and England chloroform always maintained a preference to that of ether until within the last few years. The death record of chloroform has been very much greater than that of ether, therefore under most circumstances ether is considered the safer of the two.

The administration of general anaesthetics is accomplished by inhalation, but the absorption and excretion of these agents are almost solely accomplished by the lungs and seem to follow the ordinary physical law of absorption of gases by fluids. As the vapors of chloroform are increased in the lungs the greater is the quantity taken into the blood, consequently the greater is narcosis. It is therefore considered advisable and in fact quite essential that the concentration of the vapors of chloroform should not be too vigorously forced into the lungs. There seems to be a vast difference in the effects produced by the inhalation of chloroform, for it has been observed in some persons that only a small quantity of this vapor produces dangerous symptoms, and in fact may produce death in a very short time, while other individuals may take large quantities with impunity and may be continued in the anaesthetic stage for an indefinite period. It is usually considered wise in the administration of chloroform or ether to allow the patient to take a few inhalations of air, and then again apply the anaesthetic agent. In this way it gives one an opportunity to see how their patient is effected by the anaesthetic.

It may be said that the symptoms manifested in the administration of ether and chloroform are three; first, the imperfect consciousness or semi-conscious state; the second is the stage of excitement, and the third is that of profound anaesthesia. In the first

stage there is a feeling of asphyxiation; this condition is specially marked in the case of ether, the face and head having an increased warmth which eventually extends to the entire body; the senses become less acute, a ringing and hissing and roaring in the ears, with an inability to move the limbs, which is an indication that the general unconscious state is almost complete. As has just been said, in the first stage there is a feeling of suffocation, with the exception of this condition the patient may suffer no unpleasantness, and in some instances this condition passes from the first to the second stage with a feeling of pleasure.

The second stage varies considerably in different individuals. In the case of children, for instance, the excitement is quite or entirely absent; in persons of a more advanced age there may be no excitement except, perhaps, a mere tremor, with extension of the limbs and irregularities of the respiration. But in many cases the profound anaesthetic stage is reached only with difficulty, with a movement of the arms as though they are trying to push away the anaesthetic mask in order to free themselves from the condition in which they are placed. There is more or less coördination of movement which appears as though the patient was passing through a dream-like state in a semi-unconscious condition; sometimes in this state the patient may laugh or cry in such a way as to make him appear quite conscious of all that is going on. Patients will many times carry on a conversation about the surrounding conditions or something connected with their life or their family in a somewhat coherent way, but they are never aware of what they have said after they have come out of the anaesthetic. In this stage the pulse is usually increased, the skin is flushed, respiration is extremely irregular, the pupils somewhat dilated, and while the skin is more or less flushed it has somewhat of a cyanotic appearance. If the anaesthetic is pushed at this stage the muscles relax and it may be said that the patient is passing into the stage of profound anaesthesia, which, as above stated, is the third stage of anaesthesia. The face assumes a death-like appearance, which is largely due to the relaxation of the muscles; the pupils of the eyes become more or less contracted and fail to react to light. The reflexes are the last to disappear. When the eye fails to close upon touching the cornea it may be said that the patient has passed into a general anaesthetic stage; the respiration is slow and shallow but regular. This stage of anaesthesia can be maintained for several hours. If the pulse begins to weaken and the respirations become



more shallow the body temperature will invariably diminish. When these last named conditions appear it should be a warning to those administering the anaesthetic that the patient is profoundly anaesthetized and that the administration of the anaesthetic should be watched with the greatest of care. Upon the withdrawal of the anaesthetic after the operation has been completed the patient quickly begins to pass back into somewhat the same condition he was in during the second stage; is usually not troubled with as much excitement, not quite so noisy, and if the anaesthetic has been continued for a great length of time the stage of excitement soon passes off with somewhat of giddiness in a semi-unconscious state; the patient may become nauseated, with retching which may last long after the patient becomes conscious.

During the third stage of anaesthesia, which is the operative stage in surgery, an operation may be interfered with by the necessity of occasionally allowing the patient to inhale the air, in order that circulation and respiration may be kept from the danger point.

Since chloroform and ether have become so universally used for anaesthetic purposes, it frequently happens that persons who are accustomed to its use become extremely reckless with it, and on this account it is quite essential that in discussing the use of these drugs for anaesthetic purposes one should always sound a word of caution; for it has been said that perhaps no one is so near death and recover as when in the stage of profound anaesthesia. Furthermore, I think that statistics show that the majority of persons who die under ether or chloroform are usually in the hands of persons unaccustomed to their use.

In the administration of ether and chloroform the pulse is usually accelerated on account of the nervousness and anxiety of the patient. Furthermore, the acceleration may occur from the same cause in the second stage of the anaesthesia, although in some instances a slowing of the pulse may take place from reflex stimulation. During the stage of profound anaesthesia the pulse may become slower and weaker than it is normally, in the patient. When the stage of anaesthesia is reached where the pulse is weak and slow it will sometimes remain at this point for an indefinite time, and unless the anaesthesia has reached a dangerous point there need be but little fear for a considerable time, long enough at least to do any practicable operation. But if the pulse begins to grow weak in deep and prolonged anaesthesia with a temperature of the body growing lower,

there should be some reason for anxiety and the anaesthetic should be at once withdrawn.

The respirations are usually fairly regular until the second stage of anaesthesia has been reached, unless there is a choking sensation, which is usually followed by a deep gasp for breath. Coughing sometimes appears in the first stage of anaesthesia, especially in that of ether. In the second stage respiration is irregular, especially is this true if there is much violence and excitement; the muscles of the respiratory tract become more or less involved in convulsive movements, and at this stage sometimes the air may be excluded from the lungs for several seconds, then followed by a deep gasp, when, if the anaesthetic is kept in position the blood will become loaded with the vapors of the anaesthetic agent. During the third stage, as we have just said, the breathing becomes more regular than in the second stage, but is shallower and slower than they are in the normal individual. If the operation is prolonged for considerable time and if an alarming stage is reached in the anaesthesia the respirations will be very much weakened, and sometimes it happens that the respirations completely fail and it becomes necessary to apply artificial respiration. In the failure of respiration we do not mean those cases where the mucus and saliva, by mechanical means, hinders respiration, but we mean when respiration is interfered with through the vapor pressure passing into the lungs and producing respiratory interference by reflex action. The mucus and saliva many times interfere very materially with the progress of the anaesthesia, for it frequently happens that these secretions may find a lodgment in the respiratory passage in such a way as to mechanically interfere with respiration. It also happens that a relaxation of the muscles of the tongue will allow this organ to drop back in such a way as to interfere with respiratory movements. So it must be borne in mind that these two interferences to normal respiration be well guarded. Usually when the tongue is the interference there will be a snoring sound, which at once indicates what the trouble is; one should not wait for that sound, however, for that sound may not appear even when there is an obstruction due to the tongue, but I only say that it frequently happens that the snore is one of the warnings.

The eye is one of the very important organs with reference to its behavior in anaesthesia. As we have just said, the pupils are more or less dilated in the first and second stages of anaesthesia, but when complete unconsciousness has been obtained it becomes

more or less contracted than when the patient is in a normal state. As the patient recovers from the anaesthetic the dilatation will again appear, and even though the respiration and circulation is of sufficient consequence to bring about anxiety for the patient, the pupil will usually become dilated even at that stage. There is a peculiar rolling movement of the eye, especially in the second stage. Many times the eyes become quite wide open with the eyeball rolled upward, in which condition they remain for a considerable part of the time; then with a rolling movement the eyeball is thrown in various directions, and as the third stage of anaesthesia is reached there will be the relaxation of the muscles of the eyelids and a partial closure of the eyes, occasionally the eyes become completely closed.

In the use of ether there is specially an increase of saliva and bronchial mucus. Vomiting occurs so frequently in the use of chloroform and ether, and especially the latter, that it seems we might consider it one of the phenomenon of anaesthesia.

(To be continued.)

## OPERATIVE DENTISTRY.

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BY R. B. TULLER, D. D. S.,CLINICAL PROFESSOR OF OPERATIVE DENTISTRY, CHICAGO COLLEGE OF  
DENTAL SURGERY.

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## A SERIES OF SHOP TALKS—NO. 2. SOMETHING ABOUT PORCELAIN.

The encyclopedia says that the word "pottery" in its widest sense includes all objects made of clay, molded into form while in a moist plastic state, and then hardened by fire.

A translator from Prometheus, Dr. Eduard Berdel, says porcelain is distinguished from ordinary pottery by the purity of its color, its density, its smooth, vitreous fracture, and its translucency.

The principal ingredient of porcelain is the substance which enables it to be molded to desired forms before it is baked. In this there is the relationship to potter's ware.

Clay is the most wide-spread and abundant of all mineral substances, but only the so termed pure clays may be used for porcelain. That which is termed kaolin is the purest and best to make into porcelain free from minerals that lend color, or at least objectionable color, and kaolin of different degrees of purity and fineness are found in various parts of the world. To the kaolin as usually found in nature must be added something in the way of fluxes. Kaolin fired without fluxes comes from the oven white, porous and lacking translucency. When this substance is fired to the high degree that would render it translucent it becomes like melted glass and loses shape.

There are kaolins found in China into which nature has distributed nearly or quite all the fluxing properties needed.

Baked kaolin minus fluxing ingredients is not porcelain, though holding any form given it previous to the usual firing. In its porous state it will take up and become saturated with water. It is then translucent. This shows that a transparent or glassy substance intermixed and filling the pores is necessary to make the real translucent and dense porcelain. When this is not found intermixed by nature it is added by the manufacturer according to his needs. The Chinese kaolins are, as a rule, ready to use; but not so with European. Some deposits of kaolin are found with fluxing ingredients, but with some other minerals or impurities that lend coloring, and they are widely used where a clean, white translucency is not sought.

The introduction of fluxes to kaolin is not a simple problem, for most fluxes act energetically on the clay and cause it to melt with it, which would cause it to lose its rigidity and hence its form, and ruin the work. For long years the proper ingredients to flux kaolin and produce porcelain was secret, and as yet the processes of many porcelain works are jealously guarded. Feldspar, alumina and silica are used, but feldspar increases the tendency to shrink, and though it melts and fills the pores in the kaolin, it does not remain glassy on solidifying, but forms thousands of minute crystals which impair translucency. To overcome this quartz (silica) is added, which prevents or offsets the undue shrinking, also the crystallization of the feldspar.

Pure clay, feldspar and quartz are mixed in differing proportions according to the particular quality of porcelain desired. To these are added, to produce artificial teeth of different shades, such minerals as will produce the shade desired; also, in the porcelain powders we get for our ceramic art some starch is added to make the mixed mass hold together better in carving and modeling the forms we desire. Of course this starch burns out in firing. Some other ingredients are perhaps added by the producers of dentists' porcelain materials to bring out certain qualities desired in our branch of the art of making porcelain (which is quite unlike any other); and in some of these particulars each maker has little secrets he does not disclose.

Of course high fusing and low fusing porcelains so much spoken of in dentistry are produced by different combinations of the ingredients we have noted, with possibly some that are not divulged, but it is generally understood that low fusing porcelain comes more near something that we term glass than does the high fusing. Porcelain resists fracture much more than glass, and the nearer we approach glass the less strength. Some porcelain teeth are much stronger than others, but a certain amount of bulk is necessary. Frail porcelain will break very much like glass.

Porcelain inlays placed to withstand mastication must have bulk and present no frail edges. No other substance known is capable of producing natural looking artificial teeth that have a reasonable strength and utility. Glass may be pressed and colored into the semblance of a tooth, but lacking strength has no utility.

Another decade will see the porcelain art in dentistry used fully tenfold more than it is today, for the world is becoming more and

more educated in the esthetic, and in the art that conceals art, or that can be made to do so in the hands of an artist.

The porcelain art in dentistry is quite in a class by itself in contradistinction to porcelain wares generally. What other substance could be made to not only reproduce life-like teeth, but life-like gums? What other substance can be found to restore in exact shade and contour the lost portion of a natural tooth? To the dentist who loves his art, who loves the aesthetic as well as the entirely useful, porcelain is highly prized and will be studied and used more than ever. A passing fad? Never! May the good Lord speed the day when the outrage of a gold front tooth or a big showy gold filling will be a thing told of by other generations as one of the curious customs of the past.

(To be continued.)

# ORIGINAL CONTRIBUTIONS

## TOOTH SOME TOPICS.

BY R. B. TULLER.

You bet you know Doc Butterfinger!

Of course you do; everybody knows him.

He is one of these self-satisfied individuals with a self-satisfied smile encircling his self-satisfied countenance three times and a half.

He is optimistic. The world is all aglow; no cloud overhead, nor on the horizon—*most of the time.*

Practicing dentistry is to him just one long holiday—*most of the time.* Anyway, when he's telling about the ease and rapidity with which he works, it is.

When Doc Butterfinger starts to make a gold crown this is the way it goes—as he tells it: “Why, I just pinch a band around the prepared root—you know, with a pair of pliers—done in a jiffy.

“This I take to my bunsen burner and sweat it together—no solder.

“Then I trim it up, put it back on the root, roll up a little wad of wax, place in the band and let patient bite down on it. Done in two minutes.

“It takes me just a minute to carve the wax, giving a perfect bite.

“This I push down into some moldine to the depth of the wax, remove it and flow gold into the impression thus made. When it is filled I clap on a flat piece of cold steel that chills it, first forcing it into every little inequality. The result is, solid cusps—a solid top for your band.

“Now it takes me about three minutes to file the flat side smooth and even, and adjust it with a little wax to my band.

“Now with proper shaped wire tongs, and having put a bit of solder inside, I hold it in the bunsen, and in ten seconds the crown is complete, except finishing.

“There is little surplus to file away and the whole finishing I do in about ten minutes with disks and polishing wheels.”

The crown ready to set was made, he said, in about twenty-eight minutes, “and as pretty a crown as you want to see.” Gee! he's a

marvel! Everything goes like clockwork with him—no failures. It is all as easy as falling off a log—everything else same way.

Right opposite Doc Butterfinger, across the street and a couple of stories higher, is the office of Doc Rubberneck.

Doc Rubberneck, being envious of the skill of his neighbor, and never seeing him give evidence worthy of especial note at a clinic, determined to watch Butterfinger (into whose office he could see distinctly with a pair of powerful opera glasses); himself being screened behind his curtain.

When he got a focus he could see every minute article, and it was by far a better view than at any clinic, with nobody's head in the way.

This is about the way Doc Rubberneck describes the incidents of one view:

Doc Butterfinger seemed to take his measurement of root with a wire. This took ten minutes.

From this measurement he took a piece of gold and laid out a plan for a band, and proceeded to cut it out. Then he bent it into a circle and in the course of time got the two ends adjusted to suit him. Time, thirteen minutes.

Now he doped the joint with borax, and after numerous attempts adjusted a piece of solder. Doc Rubberneck could not see what the carat was.

When ready, he put it into the bunsen flame, and the water in the borax boiled up and over and carried off the piece of solder.

Readjustment was necessary, and another ten minutes fled.

With more caution this time, he passed it into the flame, and in a jiffy the solder flowed, and so did the gold band—burnt in two.

A new beginning was necessary, even the measure had been lost.

What explanation Doc B. made to the patient Doc R. could not hear, but a new measure was taken, a new plan marked out, a new band cut, ends adjusted and doped with borax. Not so much this time. A piece of solder was placed, after several attempts, and in a moment more the soldering was done.

With a victorious smile he started to adjust it to the tooth. It wouldn't fit. It was too snug; it must be stretched. Doc had a band stretcher and he proceeded to use it, with the result that he tore the band in two. Time gone, 19¾ minutes.

Blank! blank!! blankety!!! blank!!!! blank!!!!!! Oh, no, not orally, but might just as well have been. Doc Rubberneck could see



him thinking it hard, and doing some pantomime in slamming things about. *Tempus fugit*.

Well, the thing had to be done; once more to the breach! Determination marks every feature of the skillful dentist as he starts anew with vigor. He bends to his work—a little too far. Holy smoke! the bunsen! There goes his whiskers! Not all of them. No, one side is saved; but Doc went through some rapid evolutions to head off the conflagration. Doc Rubberneck saw the sudden flash, the rapid clawing, and the things on the bench flying seven ways for Sunday.

At the same moment he saw a frightened female jump with a screech and bolt for the door, together with the maid.

Then some startled looking people came in, one with an extinguisher on his back. The fire was out, but there was smell and smoke, and a fire extinguisher has but one solitary sense, and that is to squirt when it has half a chance, and especially when chaperoned by a nervous, excited person as this was.

Whether this person thought the fire was smoldering in Doc's whiskers, or whether he thought fire extinguishing chemicals a good balm for roast jowl, and something of a hair restorer, it is not recorded, but Doc got soused. Yep.

While he was busy kicking this chaperon out, it was noted by others that the fire patrol, engines, hose carts, hooks and ladders were congregating with much clanging on the corner, and all State street began to congest in the locality rapidly and compactly. Firemen by the dozens, headed by a marshal, entered the building and would not be halted until they had personally investigated the cause of alarm, and seen the man with a one-sided expression and who smelled of burnt rag, or hair, whose disposition was perturbed, and whose language was not unlike a mule driver's whose team is stuck in the mud.

I know this, because Doc Rubberneck got busy eliminating space between him and Doc Butterfinger when the fracas began, with the design of making a fraternal call, and he not only saw at closer range but heard.

Doc Butterfinger expects to enter that crown on his books at \$10+ when he makes it. It is to be the posterior support of a bridge. It is only a bridge of sighs (huh?) in the raw material now, and spans time only, while Doc's raw material is slowly getting better.

And still his whiskers grow. He burnt them off, and clutched them out, and pushed them in, but still his whiskers grow.

This isn't the first instance recorded where buoyant optimism has been knocked into a regular pessimistic heap. But you all know Doc. He'll bob up serenely again, and make a gold crown in twenty-eight minutes while you wait—at least *he* says so.

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#### **PRESCRIPTION FOR OBTUNDING SENSITIVE DENTINE.**

**R**   Menthol . . . . . gr. xx  
       Chloroform . . . . . F. 3j  
       Etheris . . . . . F. ʒss

**M. Sig:** Use as directed.

This will not completely de-sensitize all dentine, but in large cavities where there is an extensive area involved, and where the dentine is extremely sensitive, take a little pellet of cotton, saturate it with the above liquid, place it in the cavity after the rubber dam has been adjusted, and you will find by the time you are ready to excavate the dentine that the ether and chloroform have volatilized. The value of this remedy depends largely upon the volatilization of these fluids. As these two liquids are volatilized there is abstracted from the tooth structures a certain amount of heat, and that volatilization drives the menthol into the decayed dentine. You can not remove the decay painlessly in all instances, but you will be surprised to find at times how painlessly you can remove it after applying this remedy.—J. P. Buckley, Chicago.—*Exchange*.

## Abstracts and Selections

### OLD-TIME DENTISTRY.

In a dental school in this city is a collection of some hundreds of old dental instruments, the fathers, grandfathers and great-grandfathers of the instruments with which we are all more or less familiar in the hands of modern dentists, says the New Orleans *Picayune*. The ancient tools are more suggestive of wood-carving than of dental operations and a person uninformed on the subject would handle the old "keys," as they were called, and guess almost any purpose in the world for them rather than the real one of wrenching a tooth out of a human jaw. One of the most ponderous of them was made by an American blacksmith little more than fifty years ago and used by him to extract teeth—a curious commentary on the then general condition of a science that is now so widespread.

Despite the theory that civilization is obviously ruining the teeth of humanity, it is not very difficult to argue that the average human is really very much better than he was some centuries ago. When Ovid, for example, wrote:

"Let not the nymph with laughter much abound  
Whose teeth are black, unsightly or unsound."

It seems pretty safe to conclude that "nymphs" of that description were far from uncommon in the ancient Roman empire of which he was writing. And when the English essayist, Laurence Sterne, writing centuries afterward, speaks of a "pearly set of teeth so beautiful that royalty would have pawned her choicest jewels for them," it rather goes to show that the teeth even of royalty were by no means altogether unexceptional.

Nowadays, in fact, not only could royalty obtain this envied charm at the hands of any first-class specialist in dentistry, but even the poorest person in a modern city could obtain similar treatment in the free clinic. And the fact that in this one local dental school nearly 10,000 persons a year avail themselves of free dentistry is a very good indication of the place taken by the modern dentist in making human teeth presentable and serviceable. Less than a cen-

tury ago there were only a hundred practicing dentists on this side of the water.

Dentistry, in other words, was for many centuries a little developed occupation; yet there is reason to believe that the number of rough and ready surgeon dentists was much greater than we now have any idea of. The famous *Æsculapius*, patron of physicians, is said to have been the first tooth-puller in Roman history, and there are records also of the presence of dentists in Egypt more than 2,300 years ago. How they worked, however, is one of the interesting secrets that remains kept, although it is known that they had some method of filling teeth and even used gold for that purpose. The first known mention of the toothpick was made during the first century of the Christian era—and so far as may now be judged, it very much resembled the little wooden instrument that modern politeness declares should never be used in public. There were also dentrifrices—an “Arabian produce—brightener of the mouth,” for example, which was evidently confined to comparatively few users.

#### INSTRUMENTS DATE FROM THE SIXTEENTH CENTURY.

Modern dentistry and modern dental instruments, however, date only from the sixteenth century. The dark ages, when the refinement—and with it the over-refined teeth—of the ancient civilizations was swept away by barbarian conquest, swept away also all that was then known of dental science, and the struggle between the gastronomic development of civilization and the strong serviceable teeth of the savage conquerors began all over again. As civilization again began to develop teeth began to show the effects. The superstition of the middle ages evolved a host of charlatans, whose pictures may still occasionally be seen in the early prints and who charmed away toothache by forms of magic which show that the teeth of their patients could hardly have been in such very serious condition. From these charlatans the modern dentist has descended, very much as the all-important scientist of today may be traced back directly to the ancient alchemist. Among other things, they bought living teeth and transplanted them—a horrible instance of which in later times may be remembered by any one who has ever read Victor Hugo’s “*Les Misérables*.”

One of the first printed books on dentistry was published about the middle of the sixteenth century in Spain and is especially interesting because it printed illustrations of probably all the dental instruments then in use. The book was called “A Brief and Com-

pendious Colloquy on the Structure of the Denture and the Wonderful Construction of the Mouth, with Many Remedies and Necessary Advice, Together with the Mode of Treating and Beautifying the Teeth," and ended with an engraving of St. Appollonia—the patron saint of dentistry because her martyrdom had included the extraction of all her teeth. This one book embraced all that was then known of dentistry, although since that time the number of volumes written on the subject, most of them in the last century, count up into the hundreds, and the science itself in some branches—particularly its relation to other forms of disease—is believed to be only at the beginning of what it may hereafter accomplish.

Compared with the instruments and instructions of this sixteenth century "Colloquy," however, dentistry seems already to have reached the goal of painlessness. The instruments resemble modern only in that there are several of them respectively adapted to different purposes, the first step toward the multiplicity of delicate and carefully sharpened instruments that lie in a row on the modern dentist's operating table. There is a chisel and a mallet, two or three clumsy elevators and a cheerful instrument called the "elevator," for "lifting" a tooth; two or three kinds of forceps, not for extracting of teeth, but for removing the roots of them; a small group of what would nowadays be called excavators for exploring a tooth in different directions and a rough file to sharpen them. In some of these elevators one recognizes immediately the so-called "key," an instrument with which teeth were universally extracted 100 years ago, which looks more like a corkscrew than a tooth extractor. In fact, the operator's power was applied in exactly that fashion and the tooth was twisted rather than pulled from the jaw of the suffering patient. And to avoid the bad error of extracting the wrong tooth there was yet another instrument with which tooth after tooth was probed until the operator decided that he had struck the most sensitive one.

These operations, moreover, were not performed even in a resemblance to an ancestor of the modern dentist chair. In fact, it was not until 1728 that Perri Fouchard, the most celebrated dental operator of the time in Paris, began using the first dental chair, in which he sometimes performed the curious and practically bygone operation of extracting a tooth, treating it for decay and then putting it back again—an operation that, however, expeditiously performed, could never have been invariably successful, although it is still done in emergencies.

**SOMNOFORME.\***

BY DR. B. H. COOPER, BOSTON, MASS.

Before I venture to describe the use of somnoforme, it may be well to reconsider briefly the history and general characteristics of the drug itself, as I find that there are many practitioners who have heard of it in a general way, but who are pleased to wait until it has been given an American baptism of criticism and trial before they venture to investigate it on their own account.

Somnoforme was first brought to the notice of the profession by Dr. G. Rolland, professor of Anesthetics and Dean of the Dental School and Hospital of Bordeaux, France, at the Congress of the French Association for the Advancement of Science, in 1901.

Since then its use has become general in England, France and Spain, where many of the larger hospitals are using it with success. There have now been in the neighborhood of two hundred thousand administrations of the gas, and not one death caused by its use.

Somnoforme is simply a compound of three well-known anesthetics, but a compound in which the undesirable features of each of its components have been eliminated or modified by the others. It is a mixture consisting of

Ethyl Chlorid .....	60 parts
Methyl Chlorid .....	35 parts
Ethyl Bromid .....	5 parts

and those quantities were determined after a series of exhaustive experiments and patient, profound research.

During his studies Dr. Rolland formulated three propositions:

"First: To produce anesthesia it is necessary that the tension of the anesthetic gas be superior to that of oxygen, so that it may, to a certain extent, take the place of the latter in the pulmonary alveoli.

"Second: The tension of the gas being proportionate to its volatility, the more volatile the gas the easier can it be made to take the place of oxygen.

"Third: The ideal anesthetic, if such be obtainable, would be the one behaving in its conditions of entry, of sojourn, and of exit from the body, as does oxygen.

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\*Read before the Vermont State Dental Society, March, 1905.

"Therefore, an anesthetic capable of being absorbed practically in the same manner as oxygen should produce its effect in about fifteen seconds. Then if the administration be discontinued, the anesthetic should be eliminated in proportion, as the corpuscles come again in contact with the oxygen."

Somnoforme is thus absorbed and eliminated, but its persistent analgesic effects result from a powerful impression made upon the nervous elements, as has been shown by microscopical study of the cerebral centers which show the modifications produced on the neuron.

Dr. Rolland, by his experiments, has shown that somnoforme has an elective action on the cells of purkinje, thus suppressing sensitivity to pain and temperature, and when there is saturation or excess of the anesthesia, the pyramidal cells are impressed, determining loss of consciousness.

The first noticeable feature in the administration of somnoforme is the rapidity of its action, from fifteen to thirty seconds being sufficient to produce complete anesthesia, lasting from one minute to (in some cases) two and a half minutes.

One case I had where only one inhalation was taken, and the subject remained perfectly unconscious for fully three minutes, and awoke to tell of pleasant sensations experienced during his slumber.

Four deep, full inhalations are all that are required in most cases, but as many patients fail to breathe deeply after the first effects of the gas are experienced, the mask must be kept over the face slightly longer. But in every case it is safe to say that anesthesia will be produced in one-half the time that would be required with nitrous oxid.

The second remarkable feature is the total absence of cyanosis. I have never seen a case where the slightest evidence of suffocation was manifest. Of course, suffocation could be produced by keeping the mask over the face long enough, as the gas contains no available oxygen, and the patient receives only what air has been forced into the bag by the first exhalation after the mask was applied. But full anesthesia has been produced minutes before any danger from this source would be encountered.

The inhaler is so constructed, however, that it may be used for prolonged anesthesia by simply opening the air valve from time to time, thus replenishing the supply of air in the bag, without removing the mask from the face of the patient.

The lack of any change of color will be appreciated by dentists

who have been called upon to administer nitrous oxid to patients who were accompanied by nervous and over-sympathetic friends, which friends have become so exercised over the post-mortem appearance of the sufferer that the whole acquaintance list of both were speedily informed of the horrors of gas, or warned against ever submitting to such death-like conditions.

With somnoforme this difficulty is entirely obliterated. The color of the lips and cheeks remains absolutely normal.

In anemic patients the color will be slightly deepened to a healthy pink shade, but aside from this no change takes place. Another favorable feature is the absence of struggling or pugnacious manifestations on the part of the subject. I have never had a patient raise his hands in delirious attempt to remove the mask or grasp the hands of the operator.

The odor of the gas is sweet and pleasant, with no caustic action upon the fauces or larynx, and there is therefore no choking, nor any sensation of suffocation, as with nitrous oxid.

Occasionally with the first breath, the patient involuntarily hesitates, as the odor, being quite marked and foreign to the experience, causes a momentary lapse of will-power, but that first breath has produced such a pleasing effect that the breathing is resumed without fear or dread, and two or three more inspirations will have placed the subject in the land of happy dreams.

The anesthetic sleep is influenced by the mental impression existing at the moment consciousness fades away. Let the operator prepare the mind of subject by suggesting some pleasant condition, such as the sound of sweet music, or floating on tossing ocean billows, and the patient's dream will be characterized by similar sensations.

As regards the dangers of somnoforme: The most significant fact in answer to this question is that with over two hundred thousand administrations of the gas, no death has been caused by its use.

Ether itself produces a mortality ratio of one to sixteen thousand, six hundred and seventy-seven, while chloroform produces one to three thousand, seven hundred and forty-nine administrations.

No person can say, of course, that no death will be caused by it, but after five years of severe tests and extended use, it emerges with a clean and innocent record, which should satisfy even the most discriminating and careful operators as to its safety.

There are conditions which forbid the administration of any



and all anesthetics, and in such cases somnoforme should be regarded as inapplicable. But unless the patient is known to be suffering from valvular lesions or fatty degeneration of the heart, tumor of the brain, edema of the glottis or advanced alcoholism, no dangerous symptoms need be feared.

In experimental cases where somnoforme has been administered to the lower animals for the purpose of producing death, it was found that the respiration ceased, in some cases, six minutes before the heart stopped beating, showing that in a practical case the surgeon would have ample time to resuscitate the patient in case the respiration ceased entirely.

I have given the gas in several cases where the patient claimed to have some trouble with the heart, but as the symptoms were not indicative of serious complications, I proceeded without any but satisfactory results. Nervous patients, and those whose dread of the dental chair have kept them long in a state of apprehension, are not so quickly anesthetized as those of sanguine temperament, but they all succumb, and with less trouble than would have been experienced with gas.

Some cases of nausea have been reported, but as they came from sources where the anesthetic was being used for the first time, undoubtedly more of the agent was given than was necessary. However, such cases are uncommon, and more familiarity with the drug will probably eliminate such experiences.

The indications of complete anesthesia are practically the same as with nitrous oxid. The absence of corneal reflex, together with relaxation of the muscles, and deep, quiet breathing, are the chief indications, and these are usually attained with from two to seven full inspirations.

If the patient hesitates in his breathing, as many will always do during the administration of any kind of anesthetic, a firm pressure on the chest, or a sharply spoken command, will generally suffice to induce resumption.

I believe that most operators, when administering gas, are in the habit of allowing one breath of fresh air for every six or seven of the gas. With somnoforme this is not to be done. The pure article should be given until sleep is induced, unless in some special case an extraordinary tolerance of the drug is encountered. Judgment in such cases should govern, and air be admitted by simply opening the valve without removing the mask from the face.

With regard to the length of time a person may be kept under the influence of somnoforme, I will quote from Dr. Rolland, who speaks of a case of gangrene of the cheek, which was operated on at the Bordeaux Dental School. He says:

"I put that person to sleep about fifteen times; at one sitting she took a bottle and a half of somnoforme, and I managed to keep her asleep for twenty minutes. I thought, therefore, that I could use the anesthetic for longer operations. I began the experiments on a guinea pig, which I kept asleep for an hour, and then I tried it on a series of animals for periods of three and four days. A cat which had had its hips broken by a dog I anesthetized for eight hours, then killed it purposely. I have given it for surgeons performing nephrectomy, and operations on the interior of the bladder. I think there need be no anxiety as to its effects."

At a dental meeting a few days since, I anesthetized seven dentists, one after another, immediately as they arose from the banquet table, and as I presume all those stomachs were comfortably well filled, it is quite remarkable that no nausea was produced by the gas. At another meeting, one gentleman was fully anesthetized three times, at his own request, and experienced no unpleasant effects.

I have given it four times within half an hour to one patient, where almost a full upper and lower set of teeth and roots were extracted, without a sign of nausea or headache resulting.

The inventor claims that nausea is produced in only one per cent of his cases. Its action on the heart is that of a mild stimulant. The pulse quickens a trifle at first and then falls to normal. The respirations are deep, and in most cases quiet and regular. A quiet snoring is one of the indications of complete anesthesia. Stertorous breathing is seldom or never produced, and jactitation of the limbs is an uncommon occurrence.

It is not claimed that somnoforme is the ideal anesthetic, for if such a thing were possible, it would need to possess as many different properties as there are different ideas concerning what an ideal anesthetic should be. But it is claimed that it is the safest, cheapest and most convenient, and in every way the most satisfactory anesthetic agent yet produced, and we agree with Dr. Beaudry-Mills, who says, "Get used to it as quickly as you can."—*Dental Summary.*

**WHY SOME GOLD FILLINGS FAIL.\***

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BY J. F. WALLACE, D. D. S., CANTON, OHIO.

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In casting around for a subject upon which to form the basis of the short article which I shall present to you for your consideration at this time, and after looking over the failures in my past experience and the shortcomings in the operations of those coming under my observation from other operators whose reputations are both great and small, it occurred to me that there were few causes of failures that occurred more often or produced more disastrous results, the effect more annoying and painful or universally resulted in the destruction of both the hard and soft tissues, than that of the failure on the part of the operator to restore the full mesio-distal diameter of the tooth; and yet when once accomplished no part of a thorough operation can be easier performed or will yield such universal satisfaction to the patient and honor to the operator.

Like all other operations, suitable instruments and appliances are necessary to facilitate its accomplishment, as well as a proper knowledge of the prophylactic form of surfaces to guide us in their formation and an adequate knowledge of the force of occlusion to guide us in the operation.

When we neglect to restore the full mesio-distal diameter of the tooth we lessen the embrasure between the teeth, permitting that space to narrow, which prevents the free excursion of food through those spaces, and the cleansing effect thus obtained upon the cavity margins is lost. Again, the full mesio-distal breadth not being fully restored, the teeth drop closer together, making it more difficult to cleanse the proximal surfaces and very materially increases the area of susceptibility to decay, and necessitates the placing of the cavity margins farther lingually and buccally in order to place them beyond the area of susceptibility and recurrent decay.

Again, when we neglect to restore the full mesio-distal diameter of the tooth it is an absolute impossibility for the operator, be he ever so skillful, to bring the filling up to a close, sharp contact, the necessity for which there are but few things of greater importance to the future welfare of the operation. Without it there is a

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\*Read before the Northeast Missouri Dental Club.

restriction of the embrasures, which prevents cleanliness; a narrowing of the interproximal space, which produces an absorption of the soft tissues, and provides a lodging place for food particles, which harbor and nourish bacteria of all characters.

Should we neglect the full restoration of these mesio-distal cavities, and those teeth fail to fall together, closing the space, then we have the very annoying condition which permits the collection of foodstuff, especially that of a fibrous nature, collecting and wedging between the teeth, more so those which are flattest linguo-buccally, until the gum septum is almost destroyed, many times producing much pain and always followed by a state of inflammation. When this condition is permitted to remain for any length of time the alveolar process becomes absorbed and permanent loss takes place in both hard and soft tissues.

Should the teeth close the space caused by the neglect to restore the filling fully mesio-distally, then the interproximal space is very much lessened, the gum occupying that space, being pinched and crowded upon, will yield to its surrounding conditions and be partially absorbed. This leaves a space difficult to cleanse and affords a place for lodgment of foodstuff, which decomposes and forms a suitable place in which germs may collect with but slight disturbance and erect their fortifications of destruction to both hard and soft tissues.

In finishing the filling upon the proximal surface it should always present an oval or convex surface linguo-buccally. This forms a surface, the tendency of which is to throw off all substances coming in contact with it, and especially during the excursion of food in the course of mastication; thus that which would otherwise be a source of infection and destruction to the parts becomes a source of cleanliness and health.

The embrasures, especially the lingual, are usually very poorly formed, the filling being builded out quite full. These spaces are very narrow and short, the tendency of which causes broader contact points and prevents the fullest freedom of foodstuff in passing over the cavity margins; and last, but by no means the least, it largely hinders and retards the gliding of food from between the tooth cusps, and in many instances where the particles have a tendency to pack rather than glide from between them will be the immediate cause of splitting the tooth, and often results in its entire loss.

These embrasures should be beveled nicely from the contact point to the lingual cusp and from the cusp to the bulge of the crown. This gives a well formed face which permits the passage of food particles over the surfaces with no tendency to cling, hang or wedge between the teeth; it facilitates cleanliness, provides comfort and health to the soft tissues and assures greater utility from the tooth and reduces the liability of recurrence of decay to a minimum, while the area of susceptibility is confined to a very small surface, with the odds largely against any future recurrence of decay. A great many of the teeth which come to us with cavities to be filled have lost the proximal surface and the teeth have settled together, with all the attending evils following the shortening of the mesio-distal diameter of the tooth accompanying it. Should fillings be placed in these teeth without restoring them to their normal positions, the interproximal contact will begin near the gingival margin of the cavity, forming a flat proximal surface which will grasp the foodstuff, which in mastication is forced down upon the gum septum, producing much pain, and, if continued, results in the absorption of that tissue. Being thus flattened, the interproximal space is closed up, leaving no opportunity for the use of the pick, floss or any other ordinary means of securing cleanliness. This also largely increases the area of susceptibility and necessitates the extending of both lingual and buccal margins in order to secure a cleansing effect of the excursions of food over these surfaces in the course of mastication.

In restoring the mesio-distal diameter there is no part of the operation requiring greater skill and exactness than that of restoring the interproximal contact. In fact, there are few features in the restoration of a decayed tooth that is of greater importance than this, and still fewer dentists understand the proper form to give to this part of the operation. In a very large majority of the operations performed the interproximal contact extends from the gingival line to the coronal surface of the filling, occupying the full linguo-buccal surface. Nothing could be more radically wrong, and the profession should arouse from its lethargy and change the mode, form and character of this very important factor in filling teeth. There should never be a broad contact, but, on the contrary, it should be nicely beveled from the lingual, buccal and gingival margins, bringing them all up to a small, marble-like point just buccally to the center of the tooth, while the coronal surface should be beveled so that all foodstuffs passing over it will have a free surface over which to glide

freely. This leaves the embrasures and the interproximal space well open and gives the patient a free, open space, with all natural conditions favoring cleanliness and ease of accessibility, enabling the most thorough use of the brush and such other means of cleanliness as may be deemed proper to use. This, many times, is accomplished only after thorough separation, securing ample space with which to make the proper contour. In the greater number of cases the necessary amount of room can be secured by immediate separation, but when this can not be accomplished in this way it is always advisable to resort to the use of cotton, tape or gutta-percha in order to secure the necessary separation.

In practice it frequently occurs that the proximal surfaces become flattened from the long-continued wear of teeth one upon the other, the contact point being flattened or almost annihilated. This is seldom seen except in middle-aged or old people. But when such conditions are found we usually find it so as to favor the impact of food into the interproximal space, and more or less annoyance results from it. When these surfaces present a cavity of decay it is of the greatest importance to first obtain sufficient space to restore the full mesio-distal diameter of the tooth, but it occasionally occurs that we find serious annoyance and discomfort from food wedging between these teeth when no cavity is present, but there is usually a pocket near or just beneath the gum line, where decomposition of foodstuff takes place and caries is often developed. In this class of cases it is advisable to cut a cavity in the proximal surface of the tooth and fill with some of the permanent filling materials, restoring both the proximal surface and the mesio distal diameter of the tooth.

Where fillings, otherwise perfect, but from wear or from lack of proper contouring when placed in the cavity present broad, flattened interproximal surfaces and contact, it is frequently necessary to secure sufficient separation, and then, by cutting a slot in the filling, restore the tooth to its normal diameter, which will bring most satisfactory results, restoring the parts to their normal condition and providing comfort to the patient where pain and uncleanness existed almost uninterruptedly.

In many cases coming to us for restoration the teeth are very broad and thick at the neck, the proximal surface broad and flat, the embrasures narrow and shallow. In this class of teeth the restoration of the full mesio-distal diameter is hardly sufficient to accomplish the best results, but by the use of any of the ordinary means of sepa-

ration the filling may be extended sufficiently to change the interproximal contact, rendering the embrasures and interproximal surfaces of a fairly good prophylactic form, reducing the liability to recurrency of decay.

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### PORCELAIN AS A FILLING MATERIAL.

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BY HENRY C. RAYMOND, D. D. S., DETROIT, MICH.

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It will be the purpose of this very brief paper to try and enumerate the advantages that porcelain possesses over gold and amalgam as a filling material.

The three principal features or, I might say, advantages that porcelain has over gold are, first: Its quality as a preservative of the teeth. Second: Its application is effected with much less exhaustion to both patient and operator. Third: Its almost ideal harmonious effect in matching the natural teeth.

The term compatibility has been used by one of the most earnest and successful operators in porcelain, when accounting for the superior qualities it seems to have over other materials in preserving the teeth, and though the term has been questioned by some as being incorrectly applied, I know of no other word that so aptly covers the need. Porcelain seems to more closely resemble tooth substance than anything we have. Its glazed surface is the best substitute for the enamel. In texture, in color, and in resistance to the thermal changes it is more like the natural teeth than is anything else. It does not tarnish as do the metals, and when a perfectly adapted porcelain filling is cemented into a cavity, it forms a more homogeneous addition to the tooth than any metal filling, however perfectly the latter may be inserted. These features, which porcelain possesses in a marked degree more than any other material, do seem to sum up a compatibility with healthy tooth substance and the surrounding tissues, and for want of a better term, is used to account for its success in arresting dental caries.

A leaking porcelain filling, unless loose, is an impossibility, something which can not be said of gold or amalgam. We all know how difficult it is to put in a water-tight gold filling. Examine all

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\*Read before the Michigan State Dental Association, at Detroit, July 12, 1905.

the gold fillings you desire and see how few are free from discoloration at the margins and of the surrounding tooth structure, due to moisture and decomposition beneath the filling. Even many of the gold fillings put in by the most able operators are not free from that dark line surrounding the filling, and in many instances extending well beneath it. This defect is what makes many gold fillings so unsightly in the anterior teeth, presenting as they do the yellow metal and the darkened enamel and dentine adjacent. It is hardly necessary to add that such fillings are not saving the teeth. We frequently see teeth with large gold fillings in which the enamel is transversed by one or more cracks or checks, which were not present before the filling was inserted. In some instances the cracks were caused by excessive malleting, but frequently they are caused by the expansion of the metal against the unyielding enamel; large amalgam fillings will bring about the same result when put in without a cavity lining. It can not be wondered at that such fillings prove failures in a comparatively short time. Nothing could be more incompatible with tooth structure than the metals, and the wonder is that they have saved so many teeth as well as they have. Sound reasoning and good sense should demonstrate that porcelain is an infinitely better material for the preservation of the teeth, and experience has proved that such deductions are not only logical but are actually clinical facts.

How great a strain is the insertion of a large gold filling on the vitality of the operator, and how exhausting to the average patient, it is hardly necessary to mention, as many patients and operators know too well. While it may take longer to make and insert some porcelain fillings than would a gold filling, many do not take any longer than would gold for the same cavity, and in any case it is much easier for both patient and operator, as the rubber dam is rarely required and much of the work is done out of the mouth. When using porcelain we are using a material that fulfills more than does anything else the requirements of a permanent operation, and one that is harmonious with nature in effect, and with a minimum physical demand on both patient and operator. That, I think, is almost ideal dentistry. Many teeth under gold fillings and some under amalgam are so annoying from thermal changes that the metal has to be removed and replaced with something of a less irritating nature. In many instances the pulp must be devitalized before comfort is restored. Dead pulps with their attendant evils



under metal fillings are a common occurrence, especially in the anterior teeth where the protection of the pulp by the dentin is only slight. This rarely occurs with porcelain. In fact, when a metal filling has been removed, owing to the discomfort caused by the irritation from thermal changes, and porcelain is used in its place, the operation is usually followed by complete comfort and the pulp is preserved. There are many teeth which could not be saved with a metal filling which would have to be crowned, with of course the loss of the pulp. Such teeth may frequently be saved for many years with porcelain, and the pulps preserved in a healthy condition. The average operator is seldom sure that his gold operation is a perfect one, and there are many defects that he is not aware of because he can not see them. When a porcelain filling is ready for the cavity it can be seen at a glance whether it is defective or not, and, if necessary, another can be made, thus ensuring an accuracy of the operation which is very satisfactory. The use of porcelain has been objected to by some on the ground that it is so difficult to manipulate, but I think that the man who can make a gold filling can, if he will take the time to master the technique of the work, make an equally good porcelain filling. Even the average operator with the right instruction and ground work will succeed in making a creditable showing in porcelain, and in either instance he will make a more beautiful and permanent operation. A good porcelain filling will save a tooth better than the best gold filling that can be made, and a poor porcelain filling will preserve the tooth much longer than would a poor gold filling.

Some writers have asserted that while porcelain is an ideal filling under certain circumstances, its field is decidedly limited. I can not help repeating here a statement I made some time back, though a writer about a year ago dubbed it as absurd: "The application of porcelain as a filling material is only limited by the ability of the operator." There are very few places in the mouth where it can not be used successfully if the operator has thoroughly mastered his work; in fact, I know of no material that can be so extensively used with such satisfying results. Objection has been made that in many locations the margins break away, and that in many instances the cement dissolves out and leaves a space for food and moisture to gather and decompose. When the margins break from porcelain it is usually the result of faulty occlusion, or, owing to wrong method in cavity preparation, frail, weak margins results in the failure.

With an inlay perfectly adapted to all portions of the cavity, and its margins, it is impossible for enough cement to dissolve out to permit space sufficient for anything to lodge that will undergo decomposition. The fine line of cement seen when the filling is set does wash or dissolve out, but only to a certain depth, when the space becomes so narrowed that moisture can not penetrate any farther.

I have rarely seen decay around a porcelain filling, though I have seen many poor ones, and some that have been in nearly twenty years, and some even that have had the margins badly broken away for years. Can the same be said of any other material?

I have said little of the beautiful, natural appearance of porcelain and the difference it makes in the expression of the mouth and face as compared with gold. Even if it were not so good a preserver of teeth as it is, it would still have a strong claim to its place in the anterior teeth, and very many would rather have it even if it had to be renewed quite frequently. It is almost debasing to a profession, the members of which are supposed to be refined and esthetic, to disfigure and mar the face with glaring yellow metal as has been done, and is still being done to a certain extent.

I have said little of amalgam, as I hardly think it can be considered in connection with porcelain when all the advantages of the latter are summed up. The only advantage that amalgam possesses over porcelain is its ease of manipulation, which enables us to use it in some cavities that it would be almost impossible to fill with anything else, owing to their inaccessibility. Though I am an ardent advocate of the use of porcelain, it must not be understood from what I have said that I do not think that other materials have any place in our work. The most successful artist is the one who avails himself of whatever will bring the best results in a given case, always providing that he is thoroughly conscientious in his deductions, and place first and last the patient's best interest above everything else. Such is the faith I have in porcelain as a tooth preserver and because its effects are so in harmony with nature that were I confined to but one material for saving the teeth, porcelain would be that material.—*Dental Digest*.

**A CONSIDERATION OF THE CONDITIONS POINTING TO  
GRAVE RESULTS IN AND THE CAUSES OF DEATH  
FROM ALVEOLAR PROCESS.\***

BY G. V. BLACK, D. D. S., CHICAGO.

It may be said in the beginning that death from alveolar abscess is comparatively rare. Yet cases having a fatal termination are sufficiently frequent to lead us to inquire into the conditions most likely to lead to a fatal result. In doing this, however, it is perhaps just as important to point out the conditions often present in the early stages of this malady that threaten serious results, such as necrosis of the maxillary bones and grave septicemia.

Every case of alveolar abscess begins with an inflammation of the apical portion of the peridental membrane following immediately or more or less remotely the death of the pulp of a tooth. If acute there is severe pain and soreness of the tooth. In most cases this is accompanied by a lymphangitis in which the lymphatic glands of the floor of the mouth, the submaxillary lymph glands and those of the angles of the neck are more or less involved. Generally pus forms about the apex of the tooth promptly and more or less absorption of bone in the immediate neighborhood takes place quickly. During this process a sharp rise of temperature occurs, often preceded in the severer cases by a chill. The severity of these symptoms gives indications of the probable vile results that are to follow. It is well at this time, if the symptoms are severe, to look carefully to the general condition of the patient, particularly to see that the circulation is good and that the alimentary tract is in good condition. When there is considerable severity the bowels should be cleared with saline cathartic or some form of catharsis which gives large, watery stools. A fever of more than 103 degrees betokens danger in some direction and 105 degrees or 106 degrees becomes in itself dangerous unless its duration be very short.

In much the greater number of instances alveolar abscess, though for the time very painful, is very simple. Pus forms promptly, burrows to the surface of the bone through enlargement of some Haversian canal, and is discharged into the soft tissue, usually on the labial or buccal side of the tooth affected. Then it forms a rounded swelling in the sub-mucous tissue and within a few days

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finds its way to the surface and the pus is discharged. Then the symptoms quickly disappear and the abscess assumes the chronic form and may remain in that condition for many years, giving very little trouble.

Occasionally such an abscess is chronic from the first and may run its whole course so quietly as not to attract the attention of the patient. Every gradation from this to an inflammatory movement that, together with the accompanying fever, actually threatens the life of the patient, or even destroys life, have been observed. In a good many cases I have observed a temperature of 105 degrees and in a few 106 degrees and over, accompanied with enormous swelling involving a whole side of the face below the eye and including the eyelids and angles of the neck.

These appearances and their variety from this cause are so familiar to members of the dental profession that it seems unnecessary to describe them further. The rule is that, though the symptoms may be severe and entail acute suffering for the time, the whole disappears promptly with the discharge of the pus, and such cases are not regarded as in anywise dangerous to life, or even to the tissues involved.

In this normal course of alveolar abscess, with the ordinary infection producing it, the only real danger to life is from the extraordinary rise of temperature that occasionally accompanies it. I think this danger could never occur if the pus were promptly and thoroughly removed.

In the course of these abscesses there are certain conditions frequently present that give opportunity for serious results, especially necrosis of bone and the prolonging of the condition of active suppuration. The most common of these is the formation of a pus cavity between the bone and its periosteum immediately the pus reaches the surface of the bone. If this happens to occur at a favorable point for wide spreading, i. e., where there is a considerable space of bone surface without muscular attachments, the periosteum is easily lifted over the whole of the space. If coupled with this the inflammation is severe, the fever high and the formation of pus profuse, the conditions point to wide necrosis of the part of the bone that has been deprived of its periosteal covering. It is in this class of cases that most of the ugly necrosis cases occur in alveolar abscess. Also from the limited histories I have had of

death from alveolar abscess I must conclude that these have always been from this class of cases.

Such cases may be diagnosed from the following signs early in their progress: First, when the pus, after passing to the surface of the bone, forms a rounded tumor with definite outlines easily found by digital examination, the case is a simple one, though the symptoms may be severe. If the pus is not promptly discharged with the knife, as it always should be, it will soon find its own way to the surface, be discharged, and little harm is done.

If, on the other hand, the pus, after passing through the bone, spreads between the bone and the periosteum, there will be presented a soft, flabby swelling without definite margins, easily found by the fingers. In this form if an examination is made with the probe after the discharge of the pus, the bone will be found denuded of periosteum over a considerable surface. This is the most dangerous form of alveolar abscess. Wherever there is serious damage by necrosis of bone, prolongation of suppuration, or imminent danger to life quickly occurs, it is from this form of the abscess as a rule.

The particular location of the tooth is not important. The grave results arise from the pointing of the pus in such a way as to begin spreading between the bone and its periosteum. In this case the pus will spread to the limits of easily raised periosteum and often will quickly travel considerable distances. For safety such cases require immediate radical treatment by drainage as soon as they are discovered. The pus should be discharged by a free incision, the pus cavity well washed with a mild antiseptic solution, and then a sufficiently large tent of plain antiseptic gauze, or of cotton, should be placed well into the opening to insure full and complete drainage. This tent should be prepared by being dipped in 95 per cent carbolic acid and then dried out as thoroughly as possible by squeezing between thick folds of a towel, or a sufficient amount of absorbent cotton.

There is no place in the human body where this matter of care in securing beyond question the complete drainage of abscesses is so important as in the mucous tissues of the mouth. The reason for this is found in the fact that the blood supply is so rich in this region that cuts close in a surprisingly short time and the formation of pus is often profuse and rapid. I have seen a cut three-fourths of an inch long through which a large quantity of pus had been discharged glued together so strongly within six hours that a

new incision had to be made. The cut had been fully sufficient for the purpose of drainage, but it did not remain open a sufficient length of time to accomplish the purpose.

Here we must insist upon the necessity of keeping up the drainage for a sufficient time for the complete cleansing of the abscess. One that is discharged early while the act of primary pus formation is in active progress is not often sufficiently drained by being once fully emptied of its contents. The process of pus formation is in active progress in the walls of the abscess cavity and more pus is sure to form and require removal. This is especially true when one wall of the pus cavity is bone deprived of its periosteal covering. It is largely for this reason that I insist on the use of 95 per cent carbolic acid in the tent first used in these cases, indeed all cases of the drainage of abscesses in the membranes of the mouth. A very small amount of carbolic acid retained in the gauze or cotton is sufficient to cauterize the lips of the incision without injury to surrounding tissue, makes the opening freer than it would otherwise be, promotes the egress of pus and at the same time presents more of a barrier to the ingress of new infective material.

The rule is that the most severe characters of alveolar abscess treated in this way abate promptly. The swelling and the pain disappear, necrosis of bone does not occur, and the patient feels well within a few days. This is said on the supposition that the case is seen and promptly treated very soon after the pus has begun to form.

On the other hand, if the treatment is delayed, grave results are to be expected. Bone with its Haversian canals blocked by inflammatory deposits and deprived of its periosteal nutrition can not be expected to retain its vitality many days. The area of bone worst situated as regards nutritive process will die, and then the slow process of exfoliation must be awaited. During this time suppuration in a less violent form will proceed, necessitating continuous free drainage, and exposing the case to the danger of infection in more virulent form. This much is said under the supposition that the case is one of the usual simple infections that occur in the mouth. But there are infections and infections. Infections are not all of the same variety.

*Lymphangitis.*—Lymphangitis is a usual accompaniment of alveolar abscess and is often quite pronounced in the lighter forms of the affection. This often appears early in its progress and is as

often lost sight of in its after progress, though still an important complication. It is the direct result of the poisoning of the lymph streams by the products of inflammation or by-products of pus formation; or, in either case, by microbic poisons. It is seen most in swelling and soreness of the lymph glands just under the lower maxillary bone to the rear of the submaxillary gland and in the floor of the mouth, later anywhere about the angles of the neck. In persons of ordinary health these glands, though they become very sore and often distressing, rarely suppurate. If, however, the glands are already tuberculous, suppuration may occur as a sequel and give trouble.

*Infections in Alveolar Abscess.*—The most usual form of pus-producing micro-organism found in alveolar abscess is the common white staphylococcus frequently found in the saliva, in carious dentine and in any of the remote places about the mucous membrane. Ordinarily this is not a very virulent organism, yet sometimes it produces a very severe inflammatory movement and profuse suppuration. However, both the inflammation and the suppuration are promptly relieved by the thorough evacuation of the pus. Occasionally we find staphylococcus aureus mingled with the white and more rarely the yellow coccus has caused the original infection. In this case both the inflammation and the suppuration are likely to be more persistent and severe, but the differences are not very important. If, however, we find the streptococcus longus the case is a dangerous one. Perhaps I can not express the difference between these two types of infection better than to say that infections of the skin known as the common boil are staphylococcus infections, while those known as the carbuncle are streptococcus infections. Also that the difference in the prevalence of these two types of abscess expresses the difference in the frequency of these types of infection. Compared with this the streptococcus longus is still less frequent in the mouth.

In making cultivations from the saliva we find the white staphylococcus often, and especially so in the softened portions of carious dentin. The yellow coccus is found less often in the mouth and the streptococcus longus very rarely. In one instance I found it free in the saliva and under the finger nails in each of the four nurses who were dressing cases infected with it.

From my observation I should say that original infection with streptococcus longus is rare in alveolar abscess, yet it occurs occasionally and makes ugly business.

Infection with micro-organisms that induce edema occurs frequently, both in connection with alveolar abscess and without. It seems to be much less important when connected with abscess than when standing alone, for the reason that the serum more readily escapes from the tissues. The characteristics when alone are broad local swellings without suppuration and accompanied by considerable pain from the distention of the tissue and the inflammatory movement. When standing alone I have most often seen it occur from some slight prick or puncture; but it has occurred a number of times in extraction wounds. I have met with two cases of imminent danger of death from suffocation from the edematous swelling of the glottis and associate parts, primarily caused by infections occurring in the mouth. One of these was from infection following the extraction of a tooth, and the other from the prick of an instrument in the floor of the mouth.

In the extraction case I was called forty-eight hours after the swelling began. The swelling of the face and throat was enormous. The patient was struggling for breath and cyanosis was very pronounced, the lips and mucous membranes appearing distinctly bluish. A brisk saline cathartic had been given by the physician and to assist more directly in removing the accumulation of serum I pushed my knife through the tissues in various directions and placed the feet in hot water. In the other case the danger to life was not so imminent, but the swelling of the floor of the mouth was so great that the raphe under the tongue upon which the submaxillary and sublingual glands open was protruded over the lower teeth. The mouth could not be closed and there was much difficulty in breathing. This was treated similarly to the other case and with good results. In both these cases I made very free use of the knife purely for the purpose of giving opportunity for the escape of serum. Such cases are liable to be confounded with alveolar abscess.

*Reinfections.*—In the management of acute alveolar abscess it should be remembered that reinfection with more virulent micro-organisms may occur at any time and that the same care as to infection should be taken as in treating an aseptic wound. It is a much too common error to disregard antiseptic precautions in treating suppurations. It is very certain that many of these cases do badly because of this neglect, in other words, because they have been reinfected with other and more virulent organisms during the treatment.

It is well known, of course, that absolutely aseptic work can not



be done in the treatment of abscesses that open upon the mucous membranes of the mouth, but the nearest practicable approach to it should always be adopted.

*Extensions of Alveolar Abscess* in unusual directions hardly need consideration in this connection. In the acute forms such extensions are rarely a principal source of danger, but a neglected burrowing may suddenly become a danger point. Recently such a case came to my notice. An ordinary acute abscess at the apex of the root of a central incisor was treated by removing considerable pus through the root canal. The soreness of the tooth subsided promptly, but a little swelling remained high up on that side of the face. Four days later there was enormous swelling of the face and eyelids, but no soreness of the tooth. On examination I found a broad pus pocket lying between the periosteum and bone covering the region below the eye which I readily reached with an incision under the upper lip. In this case I suppose a little pus had passed under the periosteum between the attachment of the labial muscles into the space bounded by the attachment of the several muscles moving the upper lip, wing of the nose and the infra-orbital foramen and had been cut off when the pus had been discharged from the alveolar abscess proper. In this way a secondary deep-lying and dangerous abscess had been formed. The lower eyelid and the skin below it were a deep purple and the anterior wall of the antrum of Highmore was in imminent danger of necrosis.

*Death from Alveolar Abscess*, when not caused directly from extraordinarily high temperature, is due to septicemia. Septicemia is the direct result of poisoning of the general system by products absorbed from the area of suppuration.

This is one of the conditions so often termed blood-poisoning. The other conditions included under this term are lymphangitis (inflammation of the lymph tracts and glands) and pyemia (literally, "pus in the blood"), but in use is generally confined to a condition in which abscesses occur one after another at different points because of microbic poisoning: Metastatic abscesses. In pyemia the fever runs a very irregular course and is frequently interrupted by chills.

It includes also sapremia, a condition supposed to be due to the absorption of poisonous products of decompositions, not of parasitic organisms in the tissues, but by saprophytic organisms in stagnant accumulations of pus which become putrid; this has also been

termed putrid fever. Many such terms originated before the real connection of micro-organisms with these ailments was known; and in the fitting of them to the new causes of disease found there has been much confusion. They are not infrequently used interchangeably. However, the differences between the conditions described as lymphangitis, septicemia and pyemia are sufficiently marked. Lymphangitis is generally an accompaniment of the other two conditions, but may exist alone. The rapid increase of the proportion of white blood corpuscles as compared with the red blood corpuscles in the blood is a common characteristic in all of these conditions; indeed, it is a common characteristic of suppuration in all of its forms. For this reason the count of blood globules, white and red, in definite amounts of blood, has become an important index to the patient's condition.

In septicemia, the character of the infection which has induced the suppuration has the same importance as that which divides the ordinary boil from the carbuncle. The differences in the danger to life are similar and also there are similar differences in the symptomatology.

Septicemia often occurs in grave form from staphylococcus infections, but is usually slower in its development. In either case grave septicemia occasionally occurs quickly. Death has been reported within four days. More generally, however, very grave conditions do not occur within less time than a week or ten days of violent suppuration.

Septicemia is characterized by a continuous fever varying in degree morning and evening and presenting features somewhat similar to typhoid fever. There is apt to be headache, listlessness, disturbance of the alimentary tract, often with diarrhea, followed by an indifference to pain and to surroundings that is characteristic. As the condition becomes more grave the skin is liable to assume a leaden hue and often there is a yellowish hue, or bronzing. In very grave cases the indifference to pain and to surroundings becomes more and more marked. The pulse becomes very frequent and the action of the heart feeble.

*In the treatment* of this condition there are several points of importance. The condition of the point of suppuration is first to be considered. The treatment must be directed to the stoppage of the absorption of poisons from the abscess. This should be emptied of pus as completely as possible and very thoroughly washed with a

mild antiseptic solution. This washing, or irrigation, should be frequently repeated, so that the suppurating surfaces may be kept as clean as possible. The utmost limitation of the suppuration should be brought about for the reason that it is this that is producing the general symptoms. This should be done with the least disturbance and worry of the parts, and to the patient, but must be thorough.

The general treatment should have two principal objects that at first sight would seem to be somewhat antagonistic—the promotion of elimination of the poison absorbed and the support of the patient. The first is best done by cathartics that induce large watery stools, the second by alcoholic stimulation and good feeding. Often there will be distressing diarrhea which in the first instance is best combatted by cleaning the alimentary tract. This may be followed by stimulants and as much nourishing food given at frequent intervals as can be properly taken care of. If the pulse is very frequent and weak the heart should be supported carefully with *digitalis* given first in small doses and increased according to indications. If diarrhea becomes too profuse it may be carefully limited with opium, but not to the prevention of a fair degree of elimination. The use of antipyretics has not given good results in this condition, and especially the coal tar products are to be avoided. They do not seem to add materially to the patient's comfort, while the brief lowering of the temperature obscures the real condition. They are also likely to produce a depressant effect, which in this condition should be especially avoided. On the other hand, alcoholic stimulation is well borne and many authors recommend its free use. The claim is made that the free use of alcohol has a restraining effect upon the growth of micro-organisms, i. e., acts as an antiseptic and is beneficial in that way in addition to its stimulating effect. To me it seems that an amount of alcohol sufficient to have a marked effect in this direction would be dangerous to the patient. I notice a report in Warren's *Surgical Pathology* (page 355) of the administration of a quart of alcohol per day in this condition without bad effects. Such an amount would seem to me very dangerous. Any flushing of the face should be a sign for diminishing the dose.

After all it must be remembered that the radical cleaning of the abscess and the use of antiseptics locally to diminish, and if possible to stop the formation of pus, is the radical curative treatment.

Reports of cases of death from alveolar abscess have been singularly lacking in the particulars as to the conditions and steps of prog-

ress of the disease. In the main, however, the general conditions seem not to differ materially from the conditions reported by surgeons in septicemia from infected accident and operative wounds. In my own practice no deaths have occurred directly from acute alveolar abscess, though in several instances escape has been by a narrow margin.

The following case shows well what may happen, though the case was not alveolar abscess it was very similar. For a young lady I had removed an exostosis occupying the region of the lower jaw from the second molar to the first bicuspid, including these teeth. After ten days the patient went home under the care of the family physician with the wound doing well, but with a deep cavity granulating nicely, but not nearly closed. Two weeks later she appeared at my office without warning in a most distressing condition. She presented the same sort of insane condition so often seen in typhoid fever, only that it was accompanied by great mental distress. Her face and neck were badly swollen and it was quickly observed that pus had burrowed from the wound far down the side of the neck. The temperature was  $103\frac{1}{2}^{\circ}$ , pulse very frequent and weak. I soon learned that she had evaded her nurse and slipped out in the early morning, caught a train, and come to see me. She was immediately conveyed to the hospital, the most radical drainage of the infected area established and the parts thoroughly cleansed. Though ordinarily very sensitive, she submitted to the free use of the knife without an anesthetic and without special complaint. An irritative diarrhea was noticed and as quickly as possible the alimentary tract was cleaned with a saline cathartic and stimulation and supporting treatment pushed. Within forty-eight hours she was out of immediate danger, but the infection which caused the inflammation which ushered in the new suppuration had caused a considerable necrosis of bone just at a point where it could not well be spared, and this threatened to divide the mandible. Then the long period of suppuration awaiting the exfoliation of this necrosed bone had to be awaited, but was passed without further serious conditions developing.

In this case the active mental derangement but with a determined purpose which could, in her case, have been more easily reached by a request, and the great mental distress apparent are not common in septicemia. Other symptoms, however, were in the usual line.

I have said that in the reports of cases of death from alveolar

abscess the accounts of the symptoms and progress of the disease and conditions leading to a fatal termination have been very meager. This, however, is not the worst feature of the matter; in fact, most cases of death from alveolar abscess are not reported at all. Under these circumstances, we are unable to know much about the actual frequency of death from this cause. Further than this not a few of the cases are actually obscure in official reports of death by being reported as death from "blood poisoning," septicemia, and other captions, which, though correct enough as to the ultimate condition, give no idea of the original ailment or accident which was responsible for this condition.

Suppose the surgeon, because of a slight prick of the finger during some operation, became infected and the case is reported as death from septicemia, from pyemia or from lymphangitis, what intimation will that give statistically of the dangers of the surgeon in operating? If cases of death from infections in the dissecting room are thus reported in official records, the facts of the dangers of the dissecting room are falsified in such records. In this way the official records of death from alveolar abscess are falsified and we are denied that knowledge of them which we should have. Indeed, our official records of death from similar lines of causation are so unreliable as to be without value for scientific study for the reason that the original lesion giving the opportunity for the infection is not reported.—*Northwestern*.

## MISCELLANEOUS

### TO HASTEN THE SOLUTION OF GUTTA PERCHA IN CHLOROFORM.

Chloropercha gets out of service now and then when it is much needed because of loss of chloroform through evaporation. To get it into shape again for immediate use, add the solvent and immerse the container in a dish of hot water. The chloroform begins to boil forthwith and the material is ready for immediate application.—

*Hints.*

#### A GOOD OBTUNDANT.

I find that a saturated solution of potassium carbonate in glycerine, as given in the September number of *The Dental Summary*, very effective for sensitive dentine. I apply to cavity on cotton and let remain from ten to fifteen minutes. It can be used freely in the open mouth, as it is non-poisonous.—Dr. L. W. Jordan, *Summary*.

#### ALCOHOL AND CEMENT.

Bathing in the cavity with alcohol is not the proper final step when cement is to be used, the action of alcohol leaving a slight film which will prevent a perfect attachment. Therefore, after using alcohol renew the cavity surface with either burs or hand instruments, avoiding the margins.—*Dental Brief*.

#### TREATMENT OF PYORRHEA.

First inject into the pockets a few drops of a 15 per cent solution of cocain until the tissues are anesthetized; then with a set of Young's pyorrhea instruments, as revised by Dr. Good, I go up, if necessary, to the end of the roots, being careful to remove perfectly all of the calcareous deposits at the first sitting; and when I am satisfied there is nothing left, I polish carefully and inject into the pockets a few drops of pure lactic acid two or three times per week until results are produced, which is slow in some cases, but always sure. I then instruct the patient carefully as to the correct way to brush the teeth and gums. To say the least of it, I believe and hope I am effecting cures along this line.—Dr. J. H. Nicholson, *Era*.

### TROUBLE WITH GERMANY.

American dentists in Germany are in serious trouble because of recent court decisions there, threatening them at an early day with deprivation of the rights to practice dentistry, as practice of this profession is understood in the United States. Great prejudice against American dental institutions has been engendered because some alleged dental colleges, organized under the charter of the State of Illinois have practiced the "get the dental diploma quickly" method. This method has brought disrepute upon all American institutions and because of this, the rights of several hundred practitioners in Germany are now being assailed. These have appealed for aid to the American dental profession. It is altogether likely that at an early date, President Roosevelt will be asked to exert his good offices in behalf of these innocent victims of a misconception on the part of the German authorities, as to the true condition of dental education in this country, and as to the supervision which the state now exercises over dental educational institutions and dental practitioners.

Dr. G. N. Black is chairman of the Committee on Foreign Relations, Dr. C. R. E. Koch, is chairman of the Committee on Law of the National Association of Dental Faculties.

The last Illinois legislature enacted a law which should go a long way to prove to the German authorities that government here as well as in Germany, now supervises dental educational institutions. While the great number of these in the United States are what, in Germany, they would call private institutions, yet they are now all being required to meet a certain prescribed standard.

In Illinois, and in many other states of the Union, the state not only determines, prescribes and supervises the quality of the dental schools, and the quality of the graduates who apply for the privilege of licensed practitioners; but the quality of students for admission to the dental course is also passed upon by the state's educational officers, and the entrance certificates are inspected and passed upon by the State Board of Dental Examiners.

This Board is required "to make rules to establish a uniform and reasonable standard of educational requirements, to be observed by dental schools, colleges or dental departments of universities, and it may determine the reputability of these by reference to their compliance with said rules."—*Alumni News Letter*.

## CROWNING WITHOUT DEVITALIZING.

It is occasionally possible to crown without devitalizing, as in malformation or malposition, as in case of peg laterals, erupted either in or out of the arch, where the peculiar shape of the exposed part of the crown is such as to require little if any mechanical preparation and where perhaps it would be inadvisable to employ a dowel crown because of the doubtful character of the root; a shell crown in combination with porcelain, known as the pulp preserver, being still protected from external influences by the enamel.—Dr. Alden Bush, *Summary*.

## PROPOSITION IN ORTHODONTIA.

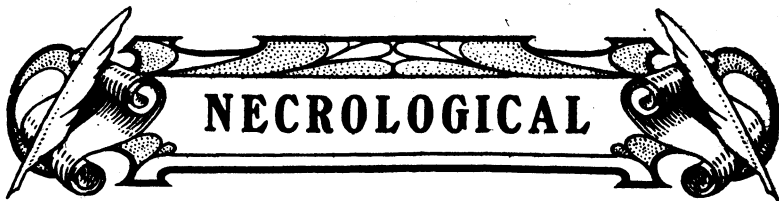
"That extraction is wrong. That the full complement of teeth is necessary to the best results, and that each tooth shall be made to assume its correct relations with its fellows." Dr. Angle further says. "I shall try to impress you from the orthodontist's standpoint with the value of each individual tooth and with the *absolute necessity* of preserving the full complement of teeth, or its equivalent in *every case*. I shall try to bring conclusive evidence that the sacrifice of teeth for either the intended prevention or correction of malocclusion is not only wrong practice and fallacious teaching, but most baneful in its results. I shall further try to show that the full complement of teeth is necessary to establish the most pleasing harmony of the facial lines."

Second: That when the teeth are in normal occlusion they are in correct positions in relation to the normal, and therefore regular.

Third: That when the physiognomy is perfect in esthetic outlines, it is a sure indication that the dental arches are complete and perfectly rounded and the teeth properly posed and in normal occlusion. On the other hand, when the teeth and dental arches are in normal relation and occlusion with each other, it is a sure indication that the facial lines are perfect, or at least unmarred or undeformed by the position of the teeth and alveolar processes.

Fourth: That when we find the first permanent molars of youth in mesio-distal mal-occlusion, in correcting the occlusion by a reciprocal movement of both the upper and lower teeth with the intermaxillary force or otherwise, we can be assured that the labial teeth will take—or can be made to take upon this basis—the positions that are most desirable as regulated teeth.—Dr. C. S. Case, *Items of Interest*.





# NECROLOGICAL

## DR. CHARLES F. ALLAN.

Dr. Charles F. Allan, a well known dentist and citizen of Newburgh, N. Y., died very suddenly January 4th of cerebral apoplexy. Dr. Allan was found dead in bed. He was a member of the Odontological Society of New York City, of the Second District Dental Society, and the American Dental Association.

Dr. Allan was born November 2, 1844, in Cleveland, Ohio, where his boyhood was passed. In 1862 he volunteered his services in defense of his country, becoming a member of Company H, Eighty-third Ohio Infantry.

In 1865 Dr. Allan moved to Newburgh and began the study of dentistry under Dr. George S. Allan, afterward a practitioner of New York City. Young Dr. Allan was engaged in practice with his preceptor until the senior Dr. Allan left Newburgh, since which time he had conducted an office alone with success.

## DR. WALKER G. BROWNE.

After an illness lasting nearly one year, Dr. W. G. Browne, one of the best known dentists in Atlanta, Ga., died January 14th.

The members of the Governor's Horse Guard, of which Dr. Browne was a lieutenant, attended the funeral services.

Dr. Browne is survived by his wife, two daughters, and one son. Tuberculosis of the spine is said to be the cause of Dr. Browne's death.

Dr. Walker G. Browne was born in Anderson County, South Carolina, August 23, 1847. He spent his boyhood days on a farm in that county. At the age of 17 he enlisted in the Confederate army and served until peace was declared.

In 1867 he began the practice of dentistry in Elberton, Ga. In 1870 he moved to Albany, Ga., where he lived for two years, after which he moved again to Anderson, S. C., living there until 1877, when he moved his home to Atlanta.

In 1891 he was elected president of the Georgia State Dental Society. He is also an honorary member of the Alabama-Tennessee and South Carolina Dental Society.

## PERSONAL AND GENERAL

**Dr. Will Van Hon**, a dentist of Pulaski, died January 1 of apoplexy.

**Dr. Julius D. Webster**, a dentist at Wilmington, N. C., died January 1 of pneumonia.

**Dr. Joseph W. Lindsay**, a dentist, aged 69, at Grand Rapids, Mich., died January 7 from apoplexy.

**Dr. George H. Swift**, a well known dentist of Syracuse, N. Y., died January 17 of hemorrhage of the brain.

**King-Sprowls.**—**Dr. C. E. King** of Winterset, Iowa, and Miss Blanch Sprowls were married in Des Moines January 6.

**Peoria County Society** held its annual meeting in Peoria January 2. **Dr. R. C. Horner** of Pekin was elected president.

**Dr. Francis L. Beecher**, a prominent dentist of Rochester, Minn., died suddenly January 15. He was fifty-five years old.

**Sold Out.**—**Dr. H. C. Heyer** of Freeport, Ill., who has been in practice for many years, has sold his office and practice to **Dr. Shelp**.

**Not Specific.**—"Delightful reception. Who is that tall gentleman talking with our hostess?" "That's Grey, the famous bridge expert." "Indeed—iron, whist, or dental?"—*Boston Transcript*.

**Extraction Fatal.**—As a result of having three of her teeth extracted **Mrs. Margaret Noon** of Pittsburg, Pa., died January 11. The sockets continued to bleed and a physician failed to stop the flow of blood.

**Tri-City Dental Society**, comprising the cities of Council Bluffs, Omaha and South Omaha, held a meeting January 3 at Council Bluffs. Papers were read by **Drs. R. O. Williams** and **Scott Covalt**, both of Council Bluffs.

**Manitoba Dentists.**—A general meeting of the Manitoba Dental Association was held January 8. The board appointed as its officers: **S. W. McInnis**, president; **C. H. Walsh**, secretary; **R. C. Campbell**, treasurer; **H. A. Croll**, registrar.

**Twenty-eight Days Without Food** is the record of **Dr. S. M. Stauffer**, of Pittsburg, who is undergoing a self-imposed fast. He is no loser of an election wager, nor is he starving himself in the interests of science. Merely a seeker after health.

**American Dentist Suicides in Paris.**—**M. A. Harrison**, an American dentist, arrived at the Hotel St. Petersburg January 9, with a hand valise as his only baggage. The next morning it was found that he had committed suicide with morphia.

**Wedelstadt Dental Club** met at Duluth, Minn., January 12. The name was changed to "Head of the Lakes Dental Club," and the following officers were elected: President, **Dr. W. T. Gould**; vice-president, **Dr. J. G. Findley**; secretary and treasurer, **Dr. C. E. Booth**.

**Sickels-Teachnor.**—Dr. Caleb Sickles of Tiffin, Ohio, and Miss Mabel Teachnor of Columbus, were married at the latter place December 4. Dr. Sickels is a half-blood Indian and is Physical Culture instructor at Heidelberg University and coach of the foot ball team. He is also a dentist.

**Vulcanizer Explodes.**—The explosion of a vulcanizer in the office of Dr. W. R. Clark, at Youngstown, Ohio, almost resulted in his death. The top blew up, striking the ceiling above and throwing James A. Campbell, president of the Youngstown Sheet and Tube company, from the chair, so great was the force of the impact.

**Extraction Causes Insanity?**—Lillian Porter became insane as the result of having two teeth extracted, her father testified in court. Two weeks previously Miss Porter went to a dentist, who administered gas and extracted the teeth. Since then she had been acting queerly and eventually became insane. The patient is 34 years old and lived in Chicago. She was sent to Kankakee.

**Kills Father-in-Law.**—Dr. James W. Simpson, a dentist who has an office on Fifth avenue, opposite the Waldorf-Astoria, New York, was arrested December 29 on a charge of homicide, in Northport, L. I. He admits that he discharged both barrels of a shot gun into the body of his father-in-law, Bentley T. Horner, a retired merchant of Northport. He says he did not know the gun was loaded and insists that the shooting was an accident.

**Tri-State Dental Society.**—Twenty members of the Tri-City Dental society, comprising dentists from Council Bluffs, Omaha and South Omaha, were present at the monthly meeting and banquet of the organization held at Council Bluffs January 3. Sessions of the society are held alternately in the different cities. Interesting papers were read by Dr. R. O. Williams and Dr. Scott Covalt. General discussion of the points presented followed the readings. Dr. Guernsey of Neola was the guest of honor.

**McDonough-Fulton County Dental Society** met January 11 at Bushnell. Dr. McMillan gave a table clinic and Dr. R. C. Amerine read a paper on "The Education of the Public to Dental Improvements Through the Press." Dr. O. H. Piper's paper was on Cavity Preparation. The following officers were elected for the ensuing year: President, Dr. C. B. Warner, Avon; vice-president, Dr. O. H. Piper, Macomb; secretary, Dr. F. V. Brookings, Macomb; treasurer, Dr. J. B. Neilson, Vermont; librarian, Dr. W. A. Neece, Macomb.

**Review Has New Cover.**—*The Dental Review* has started the new year with a novel design for front cover. Through suggestion of Mr. Wilde of the publishing department, the names and photographs of "men most prominent in the development of dentistry." The names were chosen by Dr. Charles McManers, who also furnished photographs, and Dr. William H. Trueman. The names selected were: Fanchard, Wells (*New Magazine*), Lemaire, Hayden, John Tomes, Nasmyth, Barnum, Bonwell, Arthur Cushing, Morrison, Varney, Allport, Atkinson, Martin, Taylor, Garretson, Taft, McGuillen, Josiah Flogg and Webb. A graceful tribute is thus paid to the memory of these pioneers, and *THE AMERICAN* congratulates *The Review* and Editor Johnson.

**Dr. Fred Hale**, a dentist at Adrian, Mich., December 27, was the victim of an accident by the explosion of a vulcanizer in his dental rooms. He has lost the sight of one eye and perhaps may not be able to retain the vision of the other. He was otherwise disabled and was taken at once to Ann Arbor, where he is receiving the best of treatment.

**Student Shoots Three.**—Disappointed love collected a hideous toll at Caledonia, Minn., January 2, when Ned Styer, 23 years old, killed Pearl Wheaton, 22 years old, his sweetheart, who upon parental advice rejected him, and fatally wounded her mother and sister, then shooting himself. Styer, who was about to graduate from the dentistry school of the University of Minnesota, had been forbidden the house by F. N. Wheaton, the girl's father.

**Will-Grundy County Dental Society.**—At the annual banquet of the Will-Grundy County Dental Society, given January 9, toasts were given by Drs. C. M. Thompson, Lester Bryant, F. E. Roach, H. J. Combs, Willis Strong and Rudolph Beck, all of Chicago. About thirty dentists from all parts of the two counties were present. Officers for the coming year were elected as follows: President, Dr. E. H. Stewart, Joliet; vice-president, Dr. W. M. Van Scoyoc, Morris; secretary, Dr. G. P. Saville, Joliet; treasurer, Dr. G. D. Webb, Wilmington.

**Isaac Knapp Dental Coterie.**—A banquet was held at the New Aveline hotel in Fort Wayne, Ind., by the Isaac Knapp Dental Coterie in honor of the members of the state board of dental examiners, who were there for the purpose of examining twelve applicants for licenses to practice dentistry in that state. The guests of honor were M. M. Haas, Evansville, president of the state board; F. R. Heershaw, Middletown, secretary and treasurer; W. H. Shaffer, North Manchester; Alexander Jameson, Indianapolis, and J. S. McCurdy of Fort Wayne.

**Removals.**—Drs. C. A. King, from St. Charles, Iowa, to Ida Grove; C. H. Kelleher, from Allegan, Mich., to Grand Rapids; J. J. Vincent, from Springfield, Mass., to Chatham; G. E. Reed, from Doon, Iowa, to Nashua; G. C. Benson, from Nashua to Minneapolis, Minn.; J. C. Overholt, from Findlay, Ohio, to Eaton; Harry Mitchell, from Bells, Texas, to Duncan, I. T.; John P. Horton, from Des Moines, Iowa, to Sioux City; Dr. Comer, from Mattoon, Ill., to Mound City; J. E. Eislager, Cerro Gordo, Ill., to Decatur; Alex Howatt, from Braidwood, Ill., to Joliet.

**Dentist's Safe Robbed by Patient.**—Under the guise of having a tooth filled, a man and woman had for a week been making themselves acquainted with the office of Dr. J. J. Perry, a Detroit dentist. The woman had the aching tooth and the man was her faithful companion on all occasions. When she was in the chair he remained in the outer room, where a safe stood unlocked. When the tooth was filled, the bill paid and the couple had departed, Dr. Perry found himself minus gold valued at \$77. He suspects the pair.

## ALAS.

My dentist bill no more than paid,  
Than that huge molar plugged with gold  
Is up and making horrid raid  
On all the nerves my mouth will hold.  
Ah, woe is me! With aches grown wild,  
Comes home to me this ancient truth:  
How sharper than a serpent's child  
It is to have a thankless tooth!

—*New York Herald.*

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Memoirs of an American Dentist in Paris.—“The Second French Empire,” by Thomas W. Evans. (D. Appleton & Co., New York.) When the late Dr. Evans died, in 1897, he left a large quantity of materials of a semi-literary character which it had been his intention, ultimately, to publish. He had gone to Paris in 1847 to associate himself with another American dentist of the highest standing, and by the nature of his profession, as well as because of what seems to have been a most magnetic personality, coupled with high gentlemanly attainments, he was soon acquainted with some of the most interesting personages in the French capital. During the half century that followed it was his good fortune to enjoy an increased familiarity with many whose lives have always remained a closed book to the world at large, and his sojourn in Paris was during a period when many episodes of the widest political and historical interest transpired. Some years before his death he had completed a volume in which his intimate relationships with the highest families in Paris were described, but from a feeling of delicacy the publication of a work so intimate was deferred. At the time of his death materials for a second volume had been accumulated. Dr. Evans seems to have been a man of slight literary attainments, except that he was an alert observer and a practical judge of men and motives. Before his death he made disposition of what may be called literary fragments, willing that they should be turned over to his friend, Edward A. Crane, to be by him prepared for publication. This task Mr. Crane has now accomplished. He has chosen from the two uncompleted volumes materials for a large and thoroughly interesting work. A complete knowledge of France during the days of the second empire has supplied materials for much interesting matter, including a characterization of Emperor Napoleon III, such as the reading public has seldom seen. There is a vivid description of the flight of the Empress Eugenie from the French capital, and a quantity of familiar reminiscent material that will be found deeply interesting.

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RECIPROCITY.

When a state board refuses a license to a practitioner from another State, it casts a slur upon the board of the State from which the candidate hails.—Dr. R. Ottolengui, *Cosmos*.

**MEMBERS OF FACULTY RESIGN.**

St. Louis, Mo., Jan. 8, 1906.

On account of the refusal and alleged financial inability of the Board of Trustees of Barnes University, St. Louis, to furnish the dental department of that institution with demonstrators necessitated by the requirements of the Missouri State Board of Dental Examiners and the National Association of Dental Examiners and with the apparatus and equipment necessary for the proper and legal teaching of dentistry (such as electric current, nitrous-oxide gas apparatus, etc.), Drs. B. L. Thorpe (dean), D. O. M. Le Cron (vice-dean), Richard Summa, Val. H. Frederichs, W. F. A. Schultz, C. O. Simpson (secretary), E. E. Haverstick, E. P. Dameron and W. Y. Eckhart, of the Dental Faculty, resigned December 16th, the resignation taking effect December 23, 1905.

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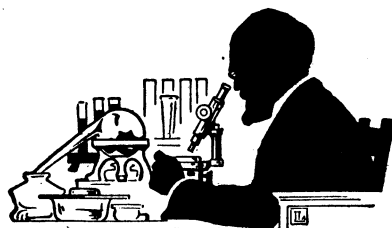
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